EXECUTIVE SUMMARY

ES.1 INTRODUCTION

Congestion on the highways of the nation and South Carolina impacts our ability to efficiently transport people and goods on a predictable and reliable schedule. Traffic congestion as defined by the Federal Highway Administration is "when traffic demand approaches or exceeds the available capacity of the system." The economic impact of congestion shows up in the form of lost time and additional fuel consumption due to delays in traffic. Congestion also impacts the ability of industries in South Carolina to compete in national and international markets. According to the 2011 Urban Mobility Report, published by the Texas Transportation Institute of Texas A&M University, "In 2010, congestion caused urban Americans to travel 4.8 billion hours more and to purchase an extra 1.9 billion gallons of fuel for a congestion cost of $101 billion." As the economy improves since the greatest downturn from the Great Depression, the report explains that highway congestion will increase throughout the country. In South Carolina, as throughout the United States, congestion costs excess dollars, uses additional natural resources, and impacts the ability of industries to compete in the regional, national, and global markets.

The South Carolina Department of Transportation (SCDOT) has identified three segments of interstate highways in South Carolina as high priorities for congestion relief. These three segments are **I-85 between Greenville and Spartanburg, I-126/I-26 in Columbia, and I-526 around Charleston.** The cost of improvements to any one of these three priority interstate projects exceeds all the funds available to SCDOT for interstate improvement in a three-year period. Due to limited funding and increasing congestion, the SCDOT has embarked on a fresh and comprehensive approach to provide congestion relief for citizens who travel on these three high priority interstate corridors in South Carolina.

ES.2 PURPOSE OF THE STUDY

The purpose of the study is to identify solutions for improving and maintaining the efficiency of I-85 as a vital transportation artery. Improving traffic flow on I-85 for the present and the future is more than just a matter of convenience in reducing the time spent in traffic. The transportation health of I-85 is inextricably linked to the economic health and vitality of the upstate region of South Carolina.

From the start, I-85 brought an economic boom to the areas of South Carolina through which it passed. An article in the *Columbia State and Record*, December 8, 1963, pointed out that land values in Greenville County had doubled in 10 years, with most of the increase occurring along I-85. A Greenville Chamber of Commerce official said:

> *"We can't bring in an industrial client who is not impressed with what the Interstate has to offer . . . . Transportation really is our lifeblood."*[1]

Interstate 85 is still very much the lifeblood of current industry and commerce along the study corridor. The economic vitality of existing industry and commerce depends to a large degree on the ability to move people, materials, and products in a very reliable and efficient manner. Today congestion is growing along the important I-85 transportation artery (threatening to slow the flow of the lifeblood of economic vitality, transportation). In order to maintain the present economic growth and assure future economic vitality, current and future congestion must be controlled and reduced.

The I-85 Corridor Study uses a systematic approach to identify current and future traffic needs and a wide array of potential solutions, many outside of the traditional approach of adding more lanes to the interstate. This Study identifies a number of strategies for relieving congestion by reducing travel demand, shifting travel to modes of transportation other than the private automobile, and improving traffic operations; all in an effort to eliminate or delay the need and expense of constructing additional highway lanes. These strategies are evaluated in the four categories of **travel demand management, modal, operational, and capacity** improvements. This study provides an in-depth evaluation of a wide spectrum of strategies based on need, benefit, and cost; and presents a plan for improvements to I-85 between Greenville and Spartanburg. The result of this study is a "cafeteria" listing of improvement projects from which local, regional, and state transportation agencies may choose. The improvements listed vary in scope and cost, thus providing choices that match the available funding. A number of the strategies are relatively low cost and could be initiated immediately.

Exhibit ES-1 Location Map

ES.3 PROJECT DESCRIPTION

The 22-mile segment of I-85 from US 25 (White Horse Road) southwest of Greenville to SC 129 (Fort Prince Boulevard) just west of Spartanburg is the subject of this corridor study. This corridor is a vital transportation link between Greenville and Spartanburg locally, as well as between Charlotte and Atlanta regionally. (See Exhibit ES-1.)

[1] U.S. Department of Transportation, Federal Highway Administration, Highway History, www.fhwa.dot.gov/infrastucture/boombelt

ES.4 THE EXISTING FREEWAY

The I-85 corridor is a six-lane median-divided freeway providing three travel lanes in each direction. I-85 serves as a primary north-south route for both long-distance and local drivers. This 22-mile stretch of I-85 has 15 interchanges and 35 bridges. One of the major features of the corridor is the interstate-to-interstate interchange at I-85 and I-385. Collector-distributor (C-D) roads also serve two western segments near Greenville. One C-D serves the interchanges at US 25, Augusta Road, and Pleasantburg Drive. The second C-D system serves interchanges at Woodruff Road and I-385.

The corridor provides access regionally to both Charlotte and Atlanta, which are both trucking hubs for the southeastern United States. This roadway is currently a main north-south trucking route. The daily percentage of trucks on I-85, as provided by SCDOT, is estimated to be 28%. However, since this study was designed to analyze only the AM and PM peak travel periods, an alternate percentage was determined based on peak hour traffic counts. The peak hour truck percentage used for the purposes of this study is determined to be 12%.

THE INTERCHANGE WITH I-385

This interchange is a major system-to-system interchange within the project limits of the corridor study. The existing interchange is shown in Exhibit ES-2. Major reconstruction of the interchange is planned. SCDOT currently has preliminary design and environmental work underway through a separate contract. A design-build contract is anticipated for the reconstruction of this interchange. The objective of the redesigned interchange is to improve or replace any substandard loops or ramps, to provide the required number of lanes on all ramps, and to provide adequate acceleration and deceleration lanes with appropriate weaving distances.

Northbound CD Road at I-385 Interchange

Exhibit ES-2 I-85 and I-385 Existing Interchange

ES.5 TRAFFIC OPERATIONS

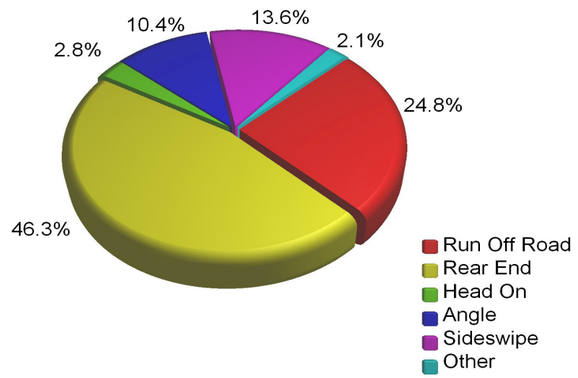
The mainline of I-85 presently operates at an acceptable level of service for the majority of the study area, with the exception of the section between US 276 (Laurens Road) and SC 14. The primary factors affecting the level of service in this section are the heavy entering and exiting volumes at I-385 and the heavy volumes at I-85 and Pelham Road.

Based on traffic projections for the year 2035, the expected level of service drops severely in the area of I-385 and Pelham Road. As a result, the majority of the mainline operates at a level of service D or worse. As expected, the section between Laurens Road and SC 14 remains the most congested with much of the section operating at a level of service F in future years if improvements are not made.

ES.6 SAFETY

The I-85 corridor experienced a total of 2,153 crashes in just over 3 years from January 1, 2007 to May 1, 2010. There were a total of seven fatal crashes recorded with a total of nine deaths. Exhibit ES-3 breaks down the crashes by severity and type.

Exhibit ES-3 Types of Crashes



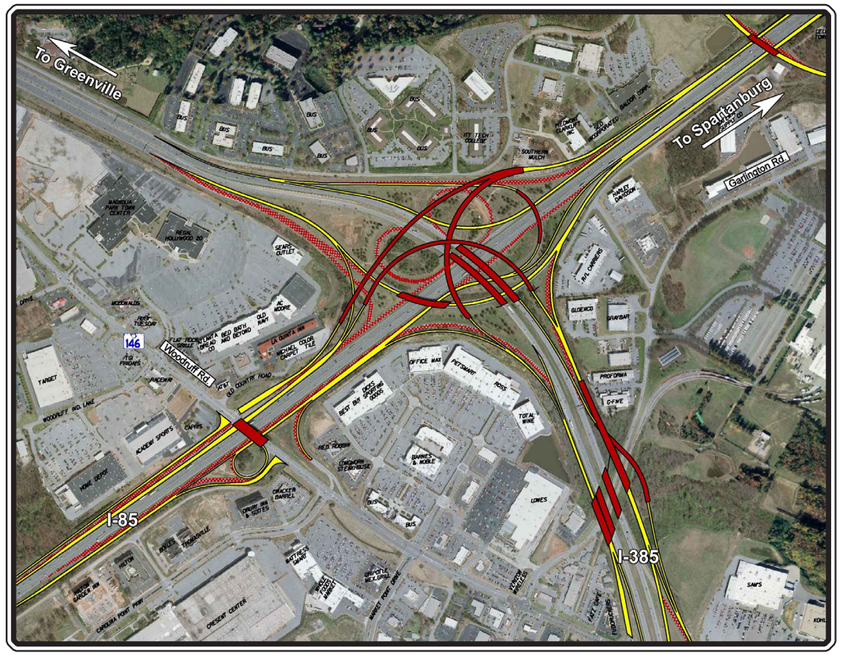
The most common accident types on I-85 were "rear end", "run off the road", and "sideswipe" accidents. Approximately 85 percent of all accidents are encompassed in these three types of crashes. These type of accidents result from stop and go traffic conditions and the lane changing/merging maneuvers that are common to roads that exhibit heavy congestion.

ES.7 TRAFFIC ANALYSIS MODEL

To help evaluate potential future improvements along I-85, a traffic operations model was developed using the VISSIM model platform developed by PTV America, Inc. Model development began with a review and inventory of the entire study corridor, which extends from White Horse Road in Greenville to the I-85/I-85 Business split in Spartanburg County. The study area includes I-85, all interchanges with ramps, and each cross-street to the first intersecting roads.

For the purposes of modeling future traffic, the reconstruction of the I-385 interchange has been included in the 2035 VISSIM model in order to simulate the anticipated future geometric design. The interchange configuration included in the model is shown in Exhibit ES-4. The alternative included in the model is subject to change as the design is further developed and the environmental process completed.

Exhibit ES-4 Proposed I-385 Interchange included in Model



Traffic volumes for the entire day were considered, but the focus of this model effort was the morning (7-9 AM) and afternoon (4-6 PM) peak travel periods. Traffic counts on each interstate segment, ramp, intersection, and cross-street were obtained and input into the model. The VISSIM model was adjusted (calibrated) to simulate measured travel speeds, delays at intersections, and observed areas where backups occurred on I-85, ramps and cross-streets.

Historic traffic growth trends, the Greenville-Pickens Area Transportation Study (GPATS), and the Spartanburg Area Transportation Study (SPATS) long range travel demand forecasting efforts were used to estimate 2015 and 2035 traffic volumes. The VISSIM model provides both performance data and a visual simulation of traffic along I-85. Using the VISSIM model and future year volumes, a myriad of improvement strategies were evaluated in this study.

ES.8 ENGAGING THE I-85 PARTNERS

Traffic conditions and any future improvements on I-85 impact the quality of life, economic opportunities, and commerce along the corridor. An important component of this study has been public involvement. Those living, working, or traveling in the area have first-hand experience with travel conditions on I-85 and have valuable insights to potential solutions to current and future traffic operations along the study corridor. SCDOT has offered a number of opportunities for public involvement including a project webpage, a project newsletter, a stakeholder group, a steering committee, media outlets, and public information meetings as well as a number of other meetings with groups interested in transportation planning.

STEERING COMMITTEE AND STAKEHOLDER GROUP

A steering committee including transportation engineers and planners from SCDOT, FHWA, the Greenville-Pickens Area Transportation Study (GPATS) metropolitan planning organization (MPO), the Spartanburg Area Transportation Study (SPATS), the Appalachian Council of Governments (APCOG), GreenLink (transit), and the Greenville Spartanburg Airport provided guidance for the study. The steering committee met on May 6, 2010; November 18, 2010; and February 25, 2011.

A stakeholder group was established to provide input as the study advanced and included representatives of four municipalities, two county governments, chamber of commerce, airport, six major industries, metropolitan planning organizations, council of governments, and SCDOT. Individually the members of the stakeholders group included elected representatives (mayors, state and local elected officials), industry representatives, and citizens with interest in transportation and commerce.

The stakeholder group was intentionally expanded to reach beyond transportation planners and providers. Industry along the I-85 corridor is the driving force behind economic vitality of the region. The employment opportunities, community participation, and the improved tax base created by industry and commerce is possible as long as industry continues to be successful. Much of the commercial success along I-85 depends heavily on the ability to move materials, products, and people efficiently along the I-85 corridor. It is for this reason that industries such as Michelin, BMW, Blue Ridge Electric Cooperative, General Electric, the Campbell Center, and the Clemson University International Center of Automotive Research were engaged in the study of the I-85 corridor.

SPECIAL FOCUS MEETINGS

The SCDOT study manager and the consultant project manager met with several entities that have a particular interest in the I-85 corridor. These entities included SPATS in June 2010, Greenlink (Greenville County transit provider) in October 2010, SPARTA (Spartanburg City transit) in October 2010, the Greenville-Spartanburg Airport in November 2010, and a combined meeting with Upstate Forever and the Southern Environmental Law Center in November 2010. A second meeting was held with Upstate Forever in April 2011. The purpose of the meetings was to provide updated information on the corridor study and to receive any input or suggestions offered.

Industry Outreach

Acknowledging the importance of industry in the continued economic vitality of the state and region, additional efforts to engage industry located along the corridor and moving freight through the corridor were made. Over 100 surveys were sent to industry located in the corridor and to freight companies shipping through the corridor. The South Carolina Trucking Association assisted in identifying freight haulers and logistic providers. All of the respondents stated that the most serious problem along the I-85 corridor is traffic congestion. The responses from industry also included a number of suggestions for improvements. These suggestions are evaluated in this study. Additionally, the surveys and discussions with industry revealed that industries using the corridor are also actively engaged in mitigating the impact of congestion on their operations through a number of individual practices.

PUBLIC INFORMATION MEETINGS

Public information meetings were held on July 29, 2010 and April 28, 2011 at the Michelin North America Plant near the Pelham Road/I-85 interchange. Both meetings included presentations as well as an open-house drop-in period. The public was invited to view displays, watch the presentation, ask questions, and offer any suggestions for improving traffic conditions on I-85. The study team evaluated the ideas and suggestions received at a conceptual strategies workshop.

CONCEPTUAL STRATEGIES WORKSHOP

Sixty-two ideas from the public representing over 156 comments as well as ideas from study team members were provided to the workshop participants for review and consideration. A list of all ideas received from the public was provided to each workshop participant and discussed at the workshop.

The thirty-two workshop participants included engineers from Greenville County, Spartanburg County, City of Greenville, SCDOT, FHWA, and the engineering firms conducting the study for SCDOT. Planners from GPATS (Greenville Pickens Area Transportation Study) and SPATS (Spartanburg Area Transportation Study) also participated in the workshop. The strategies developed at the workshop have been further evaluated to determine the potential for improvement. These strategies are discussed in more detail in this report and serve as a basis for the potential improvements evaluated in this study.

ES.9 IMPROVEMENT STRATEGIES

The improvement strategies were grouped into four categories: **travel demand management, modal, operational, and capacity**. The strategies were explored individually and evaluated collectively through the VISSIM model. The strategies for reducing congestion are briefly discussed in the paragraphs below for each of the four categories of improvements.

TRAVEL DEMAND MANAGEMENT

Congestion on any highway is a result of the large number of drivers desiring to travel at the same time on the same facility. A travel demand management strategy is any means of lessening this demand to travel. Such strategies involve shifting travel demand to times when there is less traffic, and therefore less congestion, on the highway. Implementation of travel demand management strategies has the potential to delay or eliminate the need to add lanes to the interstate. Many travel demand management strategies could be initiated in the very near future and implemented at very low cost. Success in eliminating the need to widening I-85 depends on the early, sustained, and successful implementation of these strategies to reduce travel demand in the most congested hours. The travel demand strategies recommended in this study are included in the following chart and discussed in more detail in Chapter 7 of this report.

Exhibit ES-5 TDM Strategies

STRATEGY	RECOMMENDATION	COST	TRAFFIC REDUCTION (%)
Travel Information and Advisory Service	Place additional overhead variable message signs over: • NBL between I-385 and Pelham • SBL between Woodruff and Pelham • NBL between SC 101 and SC 290 • SBL between SC 290 and SC 101 • NBL south of US 25	$875,000	0.2
Travel Information and Advisory Service	Add to SCDOT Website: • Information on Park and Ride • Information on Transit Opportunities • Information on Ride Share Programs	$3,000	0.1
511 Service	• Add referral to SCDOT website • Continue to improve customer friendliness	$1,000	0.1
Public Outreach and Education	Partner with major industries to make opportunities known to employees and identify new opportunities to meet employers' and employees' commuting needs	$20,000	1.0
Freight Trip Planning/ Scheduling	Partner with major freight generators and providers to identify and develop opportunities to shift freight traffic to off-peak	$10,000	0.2
Transit Oriented Development (TOD)	Encourage local planning agencies to consider regulations that favor TOD	$5,000	0.5
Integrated Corridor Management (ICM)	Initiate ICM Focus Group	$15,000	0.1
	Totals	**$929,000**	**2.2**

MODAL STRATEGIES

Modal options are those strategies that promote directly or support the use of alternate modes of transportation other than single occupant autos and trucks on the highways. Strategies that encourage the use of higher occupancy modes of transportation can reduce the number of vehicles on the highway. Reducing the number of vehicles using the road or the rate of traffic growth may delay or eliminate the need to widening the freeway to provide more capacity. A number of the modal strategies may be initiated in the very near future and implemented at low cost. Success in delaying or eliminating the need to widen I-85 depends on the successful implementation of these strategies to reduce the number of vehicles using the freeway in the most congested hours. The recommended modal strategies are included in Exhibit ES-6 and discussed in more detail in Chapter 8 of this report.

Exhibit ES-6 Modal Strategies

STRATEGY	RECOMMENDATION	COST	TRAFFIC REDUCTION (%)
Commuter Rail	Prepare Feasibility Study	$200,000	3.4[1]
High Speed Passenger Rail	Plan for supporting infrastructure and intermodal transportation	N/A	2.8[2]
Express Bus Service	• Provide Service from Greenville to GSP Airport • Provide Service from Spartanburg to GSP Airport • Use I-85 shoulders for bus lane, improve as needed	230,000 per year $350,000 per year	1.9
Bus Rapid Transit	Provide Service on US 29 (a parallel route), improve signal operations to support bus transit • Phase 1 - Service from Greenville to Greer • Phase 2 - Services from Greer to Spartanburg	$190,000 per year (plus $2,7000,000) $250,000 per year (plus $2,300,000)	0.2
Ride Sharing Program	Partner with major employers to develop programs and educate employees on modal opportunities	$15,000	2.0
Park and Ride Facilities	Develop Park and Ride Facilities at: • Augusta Road (existing transit services) • GSP Airport (transit service planned) • SC 101 (1.5 miles to transit service) • US 29 at I-85 (5.0 miles to transit service) • US 29 at Greer (transit service planned) • US 178 near Anderson • Cleveland Street at Spartanburg Develop P&R Website to include trip planner, transit information, and bike/pedestrian accommodations	$1,150,000 $580,000 $435,000 $725,000 $150,000 $580,000 $360,000 10,000	5.0
Taxi and Limousine Service to GSP	No recommendation		0
Bicycle and Pedestrian Opportunities	• Provide Bicycle Racks at all Park and Ride Lots • Provide Bicycle carriers on all transit buses	Included in P&R Cost	0
Truck to Train Freight Opportunities	Encourage Norfolk Southern in development of Crescent Line (intermodal centers in Charlotte and Atlanta)	None	1.1
Truck Parking Areas	Develop truck parking areas at: • White Horse Road • SBL south of US 29	$870,000 $220,000	1.5
Transit Service	Provide bus service to park and ride facilities at SC 101 and at US 29	$15,000 per year (SC101) $45,000 per year (US 29)	0.2
	Totals	**$11,375,000**	**11.9**

[1]The potential benefit of Commuter Rail is not included in the total as only a study is recommended.
[2]Benefits of high speed rail will depend on the number of stops allowed in SC. If only one stop is allowed the benefits to traffic on I-85 will be very small. If stops are allowed in both Spartanburg and Greenville, the potential benefits could be 2.8% reduction in traffic. However, the number of stops is unknown at this time, therefore the potential benefit is not counted in the total benefits of the modal strategies.

OPERATIONAL STRATEGIES

Operational strategies are improvements that aid in the flow of traffic on the existing I-85 without adding additional lanes (or capacity) to the mainline of I-85. These strategies for operational improvements are generally relatively less expensive than adding lanes to the mainline. Operational improvements may include improvements to interchange ramps, highway signing, ITS equipment, safety treatments, pavement markings, and managed lanes. While operational strategies cover a wide range of improvements and a wide range of cost, many are relatively low cost and could be implemented in the near future. Operational improvements can improve the flow of traffic and improve safety. The operational strategies recommended for the I-85 corridor are included in Exhibit ES-7 and discussed in greater detail in this study.

Exhibit ES-7 Operational Strategies

Strategy	Recommendation	Cost
I-385/Woodruff Road CD Exit at I-85 SB	Re-stripe to provide a 2-lane exit	$50,000
SC 101 Acceleration Lanes at I-85 NB and SB	Increase length of acceleration lanes by striping	$25,000
I-385/Woodruff Road CD Exit at I-85 NB	Construct 2-lane exit ramp, lengthen deceleration lane	$3,850,000
I-385/Woodruff Road CD Exit at I-85 SB	Lengthen deceleration lane	$960,000
Pelham Road Exit at I-85 NB	Construct 2-lane exit and ramp, lengthen deceleration lane	$3,850,000
Pelham Road Exit at I-85 SB	Construct 2-lane exit and ramp, lengthen deceleration lane	$3,850,000
SC 290 Exit at I-85 NB	Construct 2-lane exit and ramp	$3,850,000
SC 290 Exit at I-85 SB	Construct 2-lane exit and ramp	$3,850,000
SC 14 Exit at I-85 NB and SB	Construct 2-lane exit and ramp	$3,850,000
SC 14 Acceleration Lane at I-85 SB	Construct 2-lane acceleration lanes and ramps	$4,800,000
US 29 at I-85	Lengthen NB deceleration lane and SB acceleration lane	$1,900,000
SC 129 at I-85	Lengthen NB deceleration lane and SB acceleration lane	$1,900,000
Mainline Signing Improvements	OH sign on I-85 SB at I-385/Woodruff Road exit	$80,000
	OH signs on I-85 SB and NB exits to Pelham Road	$160,000
	OH sign on I-85 NB at Brockman-McClimon Road	$75,000
	OH sign on I-85 SB south Brockman-McClimon Road for SC 14 and GSP interchanges	$75,000
Crossing Route Signing Improvements	Six OH signs on Pelham Road	$300,000
	Six OH signs on US 29	$300,000
	Six OH signs on US 276 (Laurens Road)	$300,000
	Signing for SC 290 DDI Interchange	$600,000
Parallel Route Opportunities		
Mauldin Road to Laurens Road	Connect Kings Road to Duvall Drive	$3,400,000
Mauldin Road to Laurens Road	Connect Dairy Drive to Wrenwood Road	$1,400,000
Garlington Road Widening	Widen Garlington Road to four lanes from Pelham to I-385	$19,000,000
Roper Mountain Road Widening	Widen Roper Mountain Road to four lanes from Garlington to Farringdon	$13,000,000
Blacks Drive Widening	Widen Blacks Drive to Four lanes from Pelham to Roper Mountain Road	$12,000,000
Frontage Road from SC 14 to SC 101	Extend frontage road from SC 14 to SC 101	$8,500,000
US 29	Improve signals and install traffic cameras along US 29	$1,700,000
SC 146/SC 296	Improve signals and install traffic cameras along SC 146/SC 296	$440,000
Woodruff Road, Verdae Boulevard, Laurens Road	Improve signals for parallel routing along Woodruff, Verdae, & Laurens	$500,000
Managed Lanes	Convert Existing Lane to HOV lane in each direction	$500,000
	Convert existing lane to HOT lane in each direction	$2,000,000 per year (plus 1,100,00)
ITS - Existing Traffic Management	Expand traffic camera coverage on I-85	$180,000
	Expand incident management system to non-interstate routes	$300,000
ITS - Active Traffic Management	Develop Implementation Plan	$400,000
Enhanced Incident Responder Services	Relocate to near Brochman-McClimon Road Interchange	$3,850,000
Off-road Crash Investigation	Construct I-85 SB off-road crash investigation area	$150,000
	Construct I-85 NB off-road crash investigation area	$20,000
Median and Shoulder Treatment	Install delineators on median barrier	$12,000
Visual Barrier	Increase height of median barrier	$4,000,000
	Total	**$105,977,000**

CAPACITY STRATEGIES

Improvements in capacity are generally accomplished by adding lanes to the highway. In this study, strategies for improving capacity include adding lanes to the mainline of I-85, reconstruction or reconfiguring interchanges, and the more costly addition of lanes to ramps at SC 14/Aviation Drive and Brockman-McClimon Road. Capacity improvements are generally expensive due to the amount of construction required and the disruption to traffic. While there are immediate needs for additional capacity in a number of locations, the implementation of travel demand management and modal strategies has the potential of delaying or eliminating the need for additional highway lanes throughout the corridor. The recommended capacity improvements are included in Exhibit ES-8.

The need for the additional lanes recommended in Exhibit ES-8 could be delayed or eliminated through successful, early implementation of **travel demand management and modal strategies**. The benefits of implementing these strategies are illustrated in Exhibit ES-9 showing the northbound lane. Exhibit ES-9 (on the next page) shows the need for additional lanes to be added to existing I-85 for each 5-year increment. The left side of the exhibit, under the heading "Without TDM and Modal Strategies", shows where additional lanes will be needed along the existing six-lane highway as time goes by, traffic continues to increase, and no progress is made in implementing TDM and modal strategies. The right side of the exhibit under the heading "With TDM and Modal Strategies," shows where additional lanes will be needed if TDM and modal strategies are successfully implemented. **The effect of early, successful implementation of TDM and modal strategies can significantly delay the need for additional lanes, some beyond the 2035 design year.**

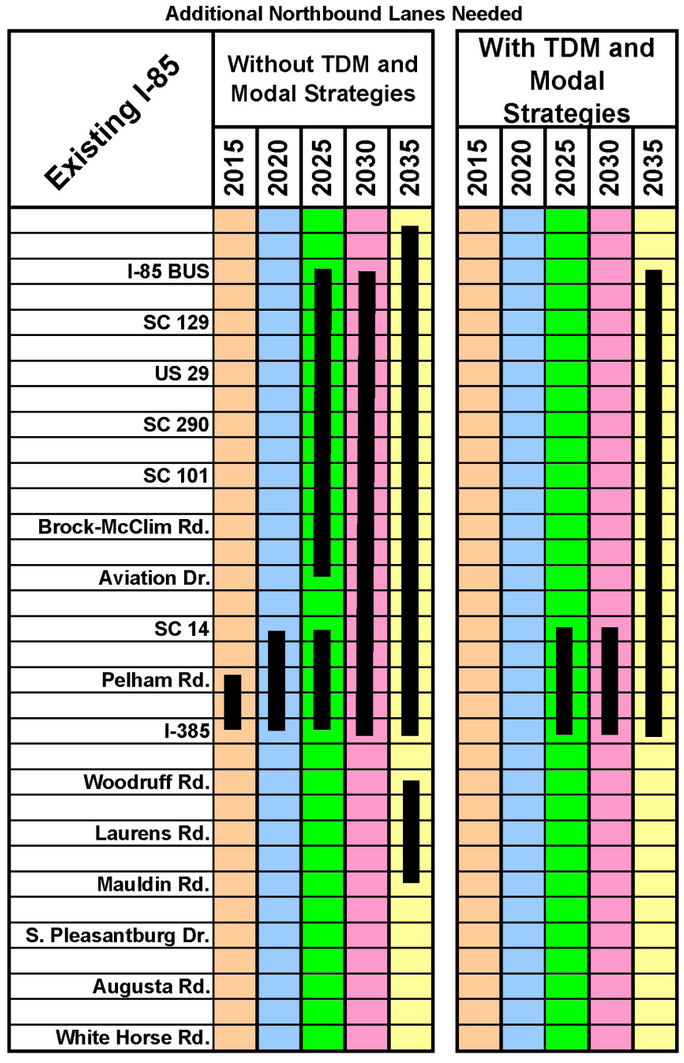
The effect of early, successful implementation of TDM and modal strategies can significantly delay the need for additional lanes, some beyond the 2035 design year.

Exhibit ES-8 Capacity Strategies

Strategy	Recommendation	Cost
Widening (Fourth Lane Addition)	Add 4th SB lane from Pleasantburg to White Horse	$11,300,000
	Add 4th SB lane from Laurens Road to CD exit ramp	$13,000.000
	Add 4th SB lane from Woodruff Road to Laurens Road	$22,700,000
	Add 4th NB lane from to CD entrance to Laurens Road exit	$11,500,000
	Add 4th NB lane from end of 4th lane to Pelham Road exit	$2,400,000
	Add 4th SB lane from Pelham Road to CD exit to I-385/Woodruff	$13,000,000
	Add 4th NB lane from Pelham Road entrance ramp to SC 14 exit	$13,200,000
	Add 4th SB lane from SC 14 entrance ramp to Pelham Road exit	$10,400,000
	Add 4th SB lane from CD exit near Mauldin Road to Pleasantburg	$2,400,000
	Add 4th SB lane within Pelham Road interchange	$4,800,000
	Add 4th NB lane within Pelham Road interchange	$4,800,000
	Add 4th NB lane from SC 14 entrance ramp to SC 129	$74,200,000
	Add 4th SB lane from SC 101 entrance ramp to SC 14	$19,700,000
	Construct SB 2-lane exit ramp at SC 14/Aviation Drive, lengthen deceleration lane	$6,300,000
	Add 4th NB lane from SC 14 to SC 14/Aviation Drive entrance ramp	$47,700,000
	Add 4th SB lane from I-85 Bus to SC 101	$14,700,000
	Add 4th NB lane from Laurens Road exit to Woodruff/I-385 CD	$7,800,000
	Construct NB 2-lane exit ramp at Brockman-McClimon Road	$5,300,000
	Add 4th NB lane from I-85 Bus to I-26 exit	$6,500,000
Widening (Fifth Lane Addition)	Add 5th NB lane from SC 129 to I-85 Bus	$9,600,000
	Add 5th SB lane from Augusta Road entrance ramp to White Horse Road exit	$9,600,000
	Add 5th NB lane from CD entrance ramp to Laurens Road exit	$11,000,000
	Add 5th SB lane from Laurens Road entrance ramp to CD exit ramp	$22,100,000
	Add 5th SB lane from Woodruff Road exit to Laurens Road entrance ramp	$14,600,000
	Add 5th SB lane from SC 14 entrance ramp to I-385 exit	$10,600,000
	Add 5th NB lane from Pelham Road exit ramp to SC 14 exit ramp	$8,000,000
	Add 5th NB lane from SC 101 entrance ramp to SC 290 exit ramp	$2,000,000
Interchange Improvements	Convert Laurens Road Interchange to a Parclo A	$8,000,000
	Convert SC 290 Interchange to a DDI	$8,600,000
	Reconstruct I-385 Interchange[2]	$240,000,000
Widening (HOV or HOT)	Construct HOV Lane Only[1]	$255,000,000
	Construct HOT Lane Only[1]	$255,000,000
Temporary Shoulder Use	Use full strength shoulders as temporary lane	$57,000
	Total	**$393,657,000**

[1]Construction cost of HOV or HOT lanes is included in other capacity strategies and is not included in the total.
[2]Construction cost of I-385 interchange is not included in the total as funding is established under a current project.

Exhibit ES-9 Northbound TDM/Modal Impacts



ES.10 ENVIRONMENTAL CONCERNS

The travel demand management strategies generally do not have direct environmental impacts as they do not directly involve construction. Construction within the existing right of way would be required for the placement of overhead message signs. Environmental documentation in the form of a Categorical Exclusion for the installation of the signs would be needed to qualify for federal funding.

The environmental effects of implementing modal strategies are expected to be minimal. The park and ride facilities would likely have little environmental consequences. Construction of these facilities will likely require Categorical Exclusion documents. Identification and assessment of specific rail corridors would be necessary before selecting the appropriate environmental documentation needed for the strategies involving rail services.

Operational improvements to the current roadway network include improved signing and pavement markings, establishing alternative route opportunities, ramp and interchange modifications, designation of high occupancy lanes, as well as other traffic management tools. The smaller projects represent minor "stand alone" improvements which can be environmentally processed by way of Categorical Exclusions.

Of the various operational improvements presented in this report, alternate (parallel) route opportunities for motorists present the greatest potential for impacting outlying areas. Widening existing roadways presents the potential for impacting homes and businesses, water bodies, and other natural as well as cultural resources. All alternative routes would require noise studies to assess impact on adjacent property owners.

The category of capacity improvements includes proposed projects that will likely require a considerable expenditure of financial and natural resources. The widening of I-85 would not impact any known federally listed endangered or threatened species, or cultural resource sites. However, it is anticipated that the work will impact several streams and wetland areas, including Rocky and Laurel Creeks and adjacent wetland areas as well as several unnamed creeks. Additionally, detailed noise studies would have to be undertaken with several residential locations possibly warranting the construction of noise barriers.

The I-85 lane additions will likely be grouped together for environmental studies and processed under an Environmental Impact Statement. The final determination of environmental documentation of all projects will be made by the Federal Highway Administration in coordination with the SC Department of Transportation. An Environmental Assessment document is currently being developed for the I-85/I-385 interchange reconstruction independent of this corridor study.

ES.11 EVALUATION AND RECOMMENDATION OF STRATEGIES

The various **travel demand management, modal, operational, and capacity strategies** are described in Chapters 7 through 10 of this study. Each strategy or group of strategies was evaluated for effectiveness, benefit, suitability, and cost. The strategies are organized into tables in Chapter 11 that compare and present the various strategies in a manner that allows for selection of projects based on these attributes.

The tables include "Measures of Effectiveness" that compare strategies within the categories of **travel demand management, modal, operational, and capacity**. A wide array of measures is included in the tables in order to evaluate the wide variety of strategies. Many of the measures are based on data generated through the VISSIM model while other measures such as "livability" are more value oriented and less rigorous. The suitability of each strategy for the I-85 corridor and its potential benefits to traffic are also evaluated in a series of tables. Potential projects are sorted by cost and benefits, to allow easier selection based on anticipated funds.

The resulting "cafeteria" list of potential projects provides the tools needed for transportation agencies and transportation providers to make decisions on how to best improve I-85 between Greenville and Spartanburg while making the best use of limited funds. These strategies for improvement are separated into the categories of **travel demand management, modal, operational, and capacity** in the Suitability/Benefit tables included as Exhibits ES-11 through ES-14 in the Executive Summary and in Chapter 11 of the corridor study. The improvement strategies are also grouped by cost and benefit as shown in Exhibit ES-15. Many of these strategies are low cost and could be implemented quickly to improve traffic flow on I-85. Additionally, local governments and transportation planning agencies in partnership with SCDOT could implement many of these strategies; thus bringing supplemental funding from non-traditional sources to achieve the goal of managing congestion on I-85.

This study demonstrates that improving congestion on I-85 over the next 20 years without adding additional lanes for the full length of the corridor can be achieved. Success in delaying or eliminating the need to add lanes will require cooperation among transportation planners, transportation providers, and transportation users. Early and aggressive pursuit of many of the travel demand management and modal strategies can lead to reduced congestion, minimal additional lanes and improved quality of life.

ES.12 SUMMARY

This report includes a number of strategies to relieve current and predicted future congestion along the I-85 corridor between Greenville and Spartanburg. These strategies are summarized in the table below.

Exhibit ES-10 Strategies Summarized

Category	Number of Strategies	Total Cost	Traffic Reduction
Travel Demand Management (TDM)	7	$929,000	2.2%
Modal	11	$11,375,000	11.9%
Operational	36	$105,977,000	---
Capacity	33	$393,657,000	---

Implementation of Travel Demand and Modal Strategies has the benefit of delaying or eliminating the need for Capacity improvements. As shown in the table above, TDM, Modal, and Operational strategies have a significantly lower implementation cost than capacity strategies, which consist mostly of constructing additional traffic lanes to meet the demand. With limited funds for expensive capacity improvements, it becomes imperative to make the existing corridor as efficient as possible.

Interstate 85 has provided the lifeblood of economic growth for the Greenville-Spartanburg area for nearly 50 years. This lifeblood has nurtured industry and commerce along its path making improvements in the quality of life possible. The question is, "In the face of shrinking dollars for transportation infrastructure, can I-85 remain a vital artery to support and grow the local, regional, and statewide economies?" The answer is "YES". The intentional and aggressive implementation of TDM, Modal, and Operational strategies can significantly improve current and future traffic congestion on I-85, thus keeping the transportation lifeblood flowing and maintaining the economic vitality of the region.

Exhibit ES-11 Travel Demand Management Table

BENEFIT	SUITABILITY			
	A	B	C	D
1	**PUBLIC OUTREACH & EDUCATION** • (TDM4) Partner with major industries to make opportunities known to employees and identify new opportunities to meet employers' and employees' needs	**511 SERVICE** • (TDM3) Add referral to SCDOT website & continue to improve customer friendliness **INTEGRATED CORRIDOR MANAGEMENT (ICM)** • (TDM7) Initiate ICM Focus Group		
2	**TRAVEL INFORMATION & ADVISORY SERVICE** • (TDM1) Place additional overhead variable message signs over: □ NBL between I-385 & Pelham Road □ SBL between Woodruff Road & Pelham Road □ NBL between SC 101 & SC 290 □ SBL between SC 290 & SC 101 □ NBL south of US 25 • (TDM2) Add to SCDOT website □ Information on Park & Ride □ Information on transit opportunities □ Information on Ride Share Programs	**FREIGHT TRIP PLANNING/SCHEDULING** • (TDM5) Partner with major freight generators & providers to identify & develop opportunities to shift freight traffic to off-peak		
3	**TRANSIT ORIENTED DEVELOPMENT (TOD)** • (TDM6) Encourage local planning agencies to consider regulations that favor TOD			

High Priority to Implement | **Medium Priority to Implement** | **Low Priority to Implement** | **Very Difficult to Implement**

Suitability: A (High) - D (Low)
Benefits: 1 (High) - 3 (Low)

Exhibit ES-12 Modal Table

BENEFIT	SUITABILITY			
	A	B	C	D
1	**(M3) EXPRESS BUS SERVICE** • Provide Service from Greenville to GSP Airport • Provide Service from Spartanburg to GSP Airport • Use I-85 Shoulders for Bus Lane, Improve as Needed **(M5) RIDE SHARING PROGRAM** • (M5) Partner with major employers to develop programs & educate employees on modal opportunities **(M6) PARK & RIDE FACILITIES** Develop Park & Ride facilities at the following locations: □ Augusta Road (existing transit service) □ GSP Airport (transit service planned) □ SC 101 (1.5 miles to transit service) □ US 29 at I-85 (5.0 miles to transit service) □ US 29 at Greer (transit service planned) □ US 178 near Anderson □ Cleveland Street at I-85 near Spartanburg Develop Park & Ride website to include trip planner, transit information, & bicycle & pedestrian accommodations		**(M9) TRUCK TO TRAIN FREIGHT OPPORTUNITIES** Encourage Norfolk Southern in development of Crescent Line (intermodal centers in Charlotte & Atlanta)	**(M1) COMMUTER RAIL** Prepare Feasibility Study
2	**(M10) TRUCK PARKING AREAS** Develop truck parking areas at White Horse Road & SBL south of US 29 **(M11) TRANSIT SERVICE** Provide bus service to Park & Ride facilities at SC 101 and at US 29	**(M4) BUS RAPID TRANSIT** Provide Service on US 29 (a parallel route), improve signal operations to support bus transit • Phase 1 – Service from Greenville to Greer • Phase 2 – Services from Greer to Spartanburg **(M8) BICYCLE & PEDESTRIAN OPPORTUNITIES** • Provide bicycle racks at all Park & Ride lots • Provide bicycle carriers on all transit buses	**(M2) HIGH SPEED PASSENGER RAIL** Plan for supporting infrastructure and intermodal transportation	
3			**(M7) TAXI & LIMOUSINE SERVICE** No recommendation	

High Priority to Implement | **Medium Priority to Implement** | **Low Priority to Implement** | **Very Difficult to Implement**

Suitability: A (High) - D (Low)
Benefits: 1 (High) - 3 (Low)

Exhibit ES-13 Traffic Operational Improvements

BENEFIT	SUITABILITY			
	A	B	C	D
1	**LENGTHEN ACCELERATION/DECELERATION LANES** • (OP2) NB & SB-Increase length of acceleration lane from loops by striping • (OP4) SB-Lengthen deceleration lane to I-385/Woodruff Road exit • (OP11) Lengthen NB deceleration lane & SB acceleration lane at US 29 • (OP12) Lengthen NB deceleration lane & SB acceleration lane at SC 129 **CONSTRUCT 2 LANE EXITS/ENTRANCE** • (OP1) SB-Revise exit to I-385/Woodruff Road to 2 lanes by re-striping • (OP5) NB-Construct 2 lane exit ramp at Pelham Road, lengthen deceleration lane • (OP6) SB-Construct 2 lane exit ramp at Pelham Road, lengthen deceleration lane • (OP7) NB-Construct 2 lane exit ramp at SC 290 • (OP8) SB-Construct 2 lane exit ramp at SC 290 • (OP3) NB-Construct 2 lane exit ramp at Woodruff/I-385 CD Exit, lengthen deceleration lane **MAINLINE SIGNING** • (OP13) SB-Overhead sign at I-385/Woodruff Road exit • (OP14) Overhead sign I-85 SB & NB exits at Pelham Road **ITS - ACTIVE TRAFFIC MANAGEMENT** • (OP32A) Develop implementation plan for active traffic management **CROSSING ROUTE SIGNING** • (OP20) Signing for SC 290 DDI Interchange	**ENHANCED INCIDENT RESPONDER SERVICES** • (OP33) Relocate to near Brochman-McClimon Interchange **OFF-ROAD CRASH INVESTIGATION** • (OP34) Construct I-85 SB & NB crash investigation area		
2	**CONSTRUCT 2 LANE EXITS/ENTRANCE** • (OP9) NB-Construct 2 lane exit ramp at SC 14 • (OP10) SB-Construct 2 lane acceleration lanes and ramps at SC 14 **MAINLINE SIGNING** • (OP15) Overhead sign on I-85 NB at Brockman-McClimon Road • (OP16) Overhead sign south of Brockman-McClimon Road for SC 14 and Airport interchanges **ITS - EXISTING TRAFFIC MANAGEMENT** • (OP32) Expand traffic camera coverage on I-85 and expand the incident management system to non-interstate routes **SAFETY** • Move the Incident Responders Operation • Off Road Crash Investigation - One Site in each Direction **MEDIAN AND SHOULDER TREATMENTS** • Double Yellow Raised Pavement Markers • (OP35) Install delineators on median barrier	**CROSSING ROUTE SIGNING** • (OP17) Six overhead signs on Pelham Road • (OP18) Six overhead signs on US 29 • (OP19) Six overhead signs on US 276 (Laurens Road) **PARALLEL ROUTES OPPORTUNITIES** • (OP26) Extend frontage road from SC 14 to SC 101 • (OP23) Widen Garlington Road to 4 lanes from Garlington to Farringdon • (OP24) Widen Roper Mountain Road to 4 lanes from Garlington to Farringdon • (OP25) Widen Blacks Drive to 4 lanes from Pelham to Roper Mountain Road		
3	**ADDING VISUAL BARRIERS** • (OP36) Raise median barrier height	**PARALLEL ROUTES OPPORTUNITIES** • (OP21) Connect Kings Road to Duvall Drive • (OP22) Connect Dairy Drive to Wrenwood Drive	**PARALLEL ROUTES OPPORTUNITIES** • (OP27) Improve signals & install traffic camera along US 29 • (OP28) Improve signals & install traffic camera along SC 146/SC 296 • (OP29) Improve signals & install traffic camera along Woodruff Road, Verdae Boulevard, & Laurens Road	**MANAGED LANES** • (OP30) Convert one existing lane to HOV lane in each direction • (OP31) Convert one existing lane to HOT lane in each direction

High Priority to Implement | **Medium Priority to Implement** | **Low Priority to Implement** | **Very Difficult to Implement**

Suitability: A (High) - D (Low)
Benefits: 1 (High) - 3 (Low)

Exhibit ES-14 Capacity Improvements

BENEFIT	SUITABILITY			
	A	B	C	D
1	**CONSTRUCT LANES ON I-85** • (C6) Add 4th NB lane from end of 4th lane to Pelham Road exit • (C7) Add 4th SB lane from Pelham Road to I-385/Woodruff CD exit • (C4) Add 4th SB lane Woodruff Road to Laurens Road • (C8) Add 4th NB lane from Pelham Road entrance ramp to SC 14 exit • (C9) Add 4th SB lane from SC 14 entrance ramp to Pelham Road exit • (C1) Add 4th SB lane from Pleasantburg Drive to White Horse Road • (C5) Add 4th NB lane from CD entrance to Laurens Road exit **RECONSTRUCT INTERCHANGE** • (C11) Reconstruct I-385 Interchange	**CONSTRUCT LANES ON I-85** • (C28) Add 5th SB lane from SC 14 entrance to I-385 exit • (C29) Add 5th NB lane from Pelham Road entrance ramp to SC 14 exit ramp • (C25) Add 5th NB lane from CD entrance ramp to Laurens Road exit • (C26) Add 5th SB lane from Laurens Road entrance ramp to CD exit ramp • (C27) Add 5th SB Lane from Laurens Road exit ramp to Woodruff Road entrance ramp • (C33) Temporary shoulder use		
2	**CONSTRUCT LANES ON I-85** • (C2) Add 4th SB lane from Laurens Road to CD exit ramp • (C12) Add 4th SB lane from CD exit near Mauldin Road to Pleasantburg • (C13) Add 4th SB lane within Pelham Road interchange • (C14) Add 4th NB lane within Pelham Road interchange • (C16) Add 4th SB lane from SC 101 entrance ramp to SC 14 • (C17) SB-2 lane exit ramp at SC 14/Aviation Drive - lengthen deceleration lane • (C15) Add 4th NB lane from SC 14 entrance ramp to SC 129 • (C22) Add 5th NB lane from SC 129 to I-85 Bus • (C18) Add 4th NB lane SC 14 to SC 14/Aviation Drive entrance ramp • (C19) Add 4th SB lane from I-85 Business to SC 101 • (C20) Add 4th NB lane from Laurens Road exit to Woodruff Road/I-385 CD **RECONSTRUCT INTERCHANGE** • (C10) Convert SC 290 interchange to DDI	**CONSTRUCT LANES ON I-85** • (C23) Add 4th NB lane from I-85 Business to I-26 exit ramp • (C24) Add 5th SB lane from Augusta Road entrance ramp to White Horse Road exit ramp **INTERCHANGE IMPROVEMENTS** • (C3) Convert Laurens Road interchange to Parclo A (C31) Construct HOV lane only (C32) Construct HOT lane only		
3	**CONSTRUCT LANES ON I-85** • (C21) NB-2 lane exit ramp at Brochman-McClimon Road • (C30) Add 5th NB Lane from SC 101 entrance ramp to SC 290 exit ramp			

High Priority to Implement | **Medium Priority to Implement** | **Low Priority to Implement** | **Very Difficult to Implement**

Suitability: A (High) - D (Low)
Benefits: 1 (High) - 3 (Low)

Exhibit ES-15 Estimated Cost to Benefit Table

Benefit	Year	Estimates Cost: $0 - 10 Million	$10 - 100 Million	Above $100 Million
Significant Impact on reducing congestion	2012	(M5) Ride Sharing Programs (M6) Park & Ride Facilities at the following locations: □ Augusta Road (existing transit service) □ GSP Airport (transit service planned) □ SC 101 (1.5 miles to transit service) □ US 29 at I-85 (5.0 miles to transit service) □ US 29 to Greer (transit service planned) □ US 178 near Anderson • Develop Park & Ride website to include trip planner, transit information, & bicycle & pedestrian accommodations (TDM3) 511 Service - Add referral to SCDOT website & continue to improve customer friendliness (TDM4) Public Outreach & Education-Partner with major industries to make opportunities known to employees and identify new opportunities to meet employers' and employees' needs (TDM7) Initiate ICM Focus Group (2013) (OP1) SB-Revise exit to I-385/Woodruff Road to 2 lanes by re-striping (OP2) NB & SB-Increase length of acceleration lane from loops by striping (OP13) SB-Overhead sign at I-385/Woodruff Road exit (C33) Temporary Shoulder Use (OP32A) Develop implementation plan for Active Traffic Management		
	2015	(OP3) NB-2 lane exit ramp at Woodruff/I-385 CD exit - lengthen deceleration lane (OP4) SB-Lengthen deceleration lane to I-385/Woodruff Road exit (OP5) Construct 2-lane exit and ramp NB at Pelham Road, lengthen deceleration lane (OP6) Construct 2-lane exit ramp SB at Pelham Road, lengthen deceleration lane (OP8) Construct 2-lane exit ramp SB at SC 290, lengthen deceleration lane (OP7) Construct 2-lane exit ramp NB at SC 290, lengthen deceleration lane (OP11) Lengthen NB deceleration lane & SB acceleration lane at US 29 (OP12) Lengthen NB deceleration lane & SB acceleration lane at SC 129 (C6) NB-4th lane from end 4th lane to Pelham Road exit (M3) Express Bus Service □ Provide Service from Greenville to GSP Airport □ Provide Service from Spartanburg to GSP Airport □ Use I-85 Shoulders for Bus Lane, Improve as Needed (OP14) Overhead sign I-85 SB & NB exits at Pelham Road (OP20) Signing for SC 290 DDI Interchange (OP34) Construct I-85 SB & NB crash investigation area (C6) Add 4th NB lane from end of 4th lane to Pelham Road exit	(C7) SB-4th lane from Pelham Road to CD exit to I-385/Woodruff (C4) SB-4th lane Woodruff Road to Laurens Road - 2 lane exit ramp (C8) NB-4th lane from Pelham Road entrance ramp to SC 14 exit (C9) SB-4th lane from SC 14 entrance ramp to Pelham Road exit (C1) SB-4th lane from Pleasantburg Drive to White Horse Road (C2) SB-4th lane from Laurens Road to CD exit (C5) NB-4th lane from CD entrance to Laurens Road exit - 2 lane entrance ramp (M1) Commuter Rail (C1) Add 4th SB lane from Pleasantburg Drive to White Horse Road (C4) Add 4th SB lane Woodruff Road to Laurens Road (C5) Add 4th NB lane from CD entrance to Laurens Road exit (C7) Add 4th SB lane from Pelham Road to I-385/Woodruff CD exit (C8) Add 4th NB lane from Pelham Road entrance ramp to SC 14 exit (C9) Add 4th SB lane from SC 14 entrance ramp to Pelham Road exit	
	2020			(C11) Reconstruct I-385 Interchange
	2025	(C14) NB-4th lane within Pelham Road interchange (C13) SB-4th lane within Pelham Road interchange		
	2030		(C28) Add 5th SB lane from SC 14 entrance to I-385 exit (C29) Add 5th NB lane from Pelham Road entrance ramp to SC 14 exit ramp	
	2035	(C25) Add 5th NB lane from CD entrance ramp to Laurens Road exit (C26) Add 5th SB lane from Laurens Road entrance ramp to CD exit ramp	(C27) Add 5th SB Lane from Laurens Road exit ramp to Woodruff Road entrance ramp	

Exhibit ES-15: Estimated Cost to Benefit Table Continued

Benefit	Estimates Cost			
	Year	$0 - 10 Million	$10 - 100 Million	Above $100 Million
Moderate Impact on reducing congestion	2012	(M11) Transit Service (TDM2) Travel Information Advisory Service Add to SCDOT website □ Information on Park & Ride □ Information on transit opportunities □ Information on Ride Share Programs (TDM5) Freight Trip Planning/Scheduling Opportunities - Partner with major freight generators & providers to identify & develop opportunities to shift freight traffic to off-peak (M9) Truck to Train Freight Opportunities (OP17) Six overhead signs on Pelham Road (OP18) Six overhead signs on US 29 (2013) (OP19) Six overhead signs on US 76 (Laurens Road) (2014) (OP35) Install delineators on median barrier		
	2015	(C10) Convert SC 290 interchange to DDI (C3) Convert Laurens Road interchange to Parclo A (M4) Bus Rapid Transit - Provide Service on US 29 (a parallel route) - Phase 1 – Service from Greenville to Greer (M10) Develop truck parking areas at White Horse Road and SBL south of US 29 (TDM1) Place additional overhead variable message signs over: □ NBL between I-385 & Pelham Road □ SBL between Woodruff Road & Pelham Road □ NBL between SC 101 & SC 290 □ SBL between SC 290 & SC 101 □ NBL south of US 25 (OP3) NB-Construct 2 lane exit ramp at Woodruff/I-385 CD Exit, lengthen deceleration lane (OP15) Overhead sign on I-85 NB at for Brochman-McClimon Road (OP16) Overhead sign for Brochman-McClimon Road for SC 14 and Airport interchanges (OP26) Extend frontage road from SC 14 to SC 101 (OP32) Expand traffic camera coverage on I-85 and expand the incident management system to non-interstate routes (OP33) Relocate to near Brochman-McClimon Interchange	(C2) Add 4th SB lane from Laurens Road to CD exit ramp (OP23) Widen Garlington Road to 4 lanes from Garlington to Farringdon (OP24) Widen Roper Mountain Road to 4 lanes from Garlington to Farringdon (OP25) Widen Blacks Drive to 4 lanes from Pelham to Roper Mountain Road	(M2) High Speed Rail
	2020			
	2025	(OP9) Construct 2-lane exit rand amp NB & SB at SC 14, lengthen deceleration lane (OP10) Construct 2-lane acceleration lanes & ramps NB & SB at SC 14/Aviation Drive (C12) SB-4th lane from CD exit Mauldin Road to Pleasantburg (C17) SB-2 lane exit ramp at SC 14/Aviation Drive - lengthen deceleration lane (C22) NB-5th lane from SC 129 to I-85 Bus (M4) Bus Rapid Transit -Provide Service on US 29 (a parallel route) -Phase 2 – Services from Greer to Spartanburg (C13) Add 4th SB lane within Pelham Road interchange (C14) Add 4th NB lane within Pelham Road interchange (C16) Add 4th SB lane from SC 101 entrance ramp to SC 14 (C17) SB-2 lane exit ramp at SC 14/Aviation Drive - lengthen deceleration lane (C22) Add 5th NB lane from SC 129 to I-85 Bus	(C16) SB 4th lane from SC 101 entrance ramp to SC 14 (C15) NB-4th lane from SC 14 entrance ramp to SC 129 (C15) Add 4th NB lane from SC 14 entrance ramp to SC 129 (C22) Add 5th NB lane from SC 129 to I-85 Bus (C17) SB-2 lane exit ramp at SC 14/Aviation Drive - lengthen deceleration lane	
	2030	(C18) Add 4th NB lane SC 14 to SC 14/Aviation Drive entrance ramp	(C19) Add 4th SB lane from I-85 Business to SC 101	
	2035	(C23) NB-4th lane from I-85 to I-26 exit (C24) SB 5th Lane from Augusta Road Entrance to White Horse Road Exit (C21) NB-2 lane exit ramp at Brochman-McClimon Road/I-385 CD	(C20) Add 4th NB lane from Laurens Road exit to Woodruff Road/I-385 CD (C23) Add 4th NB lane from I-85 Business to I-26 exit ramp (C24) Add 5th SB lane from Augusta Road entrance ramp to White Horse Road exit ramp	(C32) Construct HOT lane only[2]

Exhibit ES-15: Estimated Cost to Benefit Table Continued

Benefit	Estimates Cost			
	Year	$0 - 10 Million	$10 - 100 Million	Above $100 Million
Little Impact on reducing congestion	2015	(TDM6) Transit Oriented Development - Encourage local planning agencies to consider regulations that favor TOD (OP21) Connect Kings Road to Duvall Drive (OP22) Connect Dairy Drive to Wrenwood Drive (OP27) Improve signals & install traffic camera along US 29 (OP28) Improve signals & install traffic camera along SC 146/SC 296 (OP29) Improve signals & install traffic camera along Woodruff Road, Verdae Boulevard, & Laurens Road (OP36) Raise median barrier height		
	2020			
	2025			
	2030			
	2035		(C30) Add 5th NB Lane from SC 101 entrance ramp to SC 290 exit ramp (OP30) Convert one existing lane to HOV lane in each direction[1] (OP31) Convert one existing lane to HOT lane in each direction (C21) NB-2 lane exit ramp at Brochman-McClimon Road	(C31) Construct HOV lane only

Note 1: OP30 and OP31 require the conversion of existing lanes without constructing additional lanes.
Note 2: C31 and C32 include the construction of an additional lane in each direction for the full length of the corridor. The cost of C31 and C32 could be included in the $10 to $100 million range based on the assumption that the additional lanes are added in smaller segments consistent with other capacity strategies and converted from general use to HOV or HOT use once all segments are completed.

Acknowledgement

A number of individuals and groups assisted in the Study of the I-85 Corridor between Greenville and Spartanburg. It is with appreciation that the participation of the members of the Steering Committee, the Stakeholders Group (both the entities and their representatives), and the general public is acknowledged. The guidance, information, insightful thought, and suggestions for improvement of the I-85 Corridor have been invaluable in the completion of this study.

Steering Committee

SCDOT
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Stakeholders

City of Greenville
Greenville City Council
Spartanburg County Council
Greenville Chamber of Commerce
City of Mauldin
City of Spartanburg
Spartanburg City Council
City of Greer
Greenville-Pickens Area Transportation Study
Spartanburg Area Transportation Study
South Carolina Appalachian Council of Governments
Spartanburg Area Transportation Study
Greenville-Spartanburg International Airport
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